SA-WMSP68

SERVICE MANUAL

US Model

Ver 1.0 2004.07

• SA-WMSP68 is the subwoofer section in HT-5800DP/6800DP/DDW960.

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 6 ohm loads, from 28 – 200 Hz; rated 100 watts, minimum RMS power, with no more than 0.8% total harmonic distortion from 250 milliwatts to rated output.

Speaker system	Active subwoofer, magnetically shielded
Speaker unit	250 mm cone type
Enclosure type	Acoustically loaded bass reflex
RMS output	120 W (6 ohms, 100 Hz, THD 10%)
Input	LINE IN (input pin jacks)
Power requirements	120 V AC, 60 Hz
Power consumption	95 W
Dimensions (w/h/d) (Approx.)	13 3/8 × 16 2/8 × 14 4/8 inches (337 × 410 × 365.5 mm) including front panel
Mass (Approx.)	28 lb 11 oz (13.0 kg)

Design and specifications are subject to change without notice.

SUB WOOFER

9-879-059-01
2004G04-1
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Sony Corporation
Home Audio Company
Published by Sony Engineering Corporation

SONY®

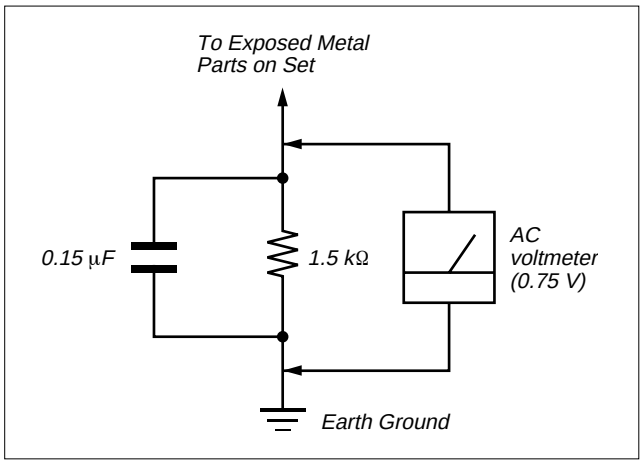
SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



(Fig. A)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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● UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

SECTION 1
DIAGRAMS

1-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

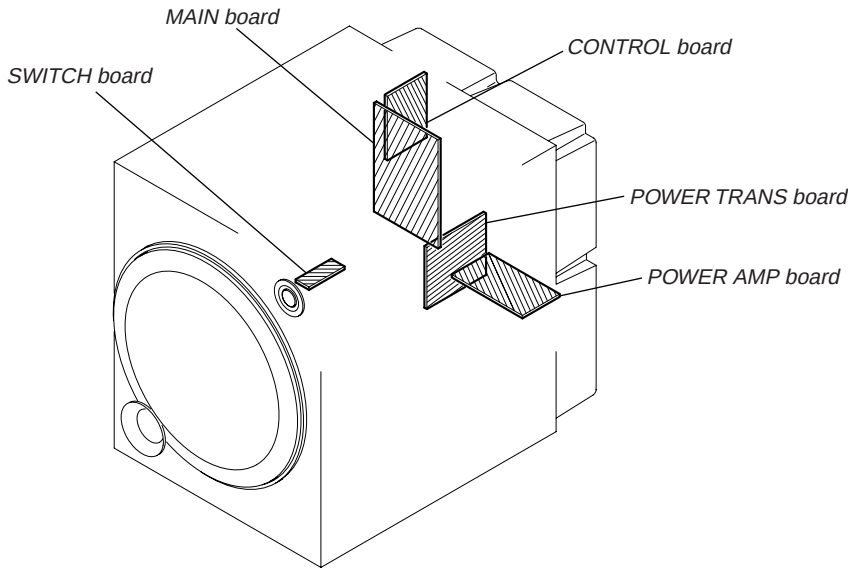
- ▬▬ : B+ Line.
- ▬ ▬ ▬ : B– Line.
- Voltages are dc with respect to ground under no-signal (detuned) conditions.
  no mark : Power on
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : AUDIO

For printed wiring boards.

Note:

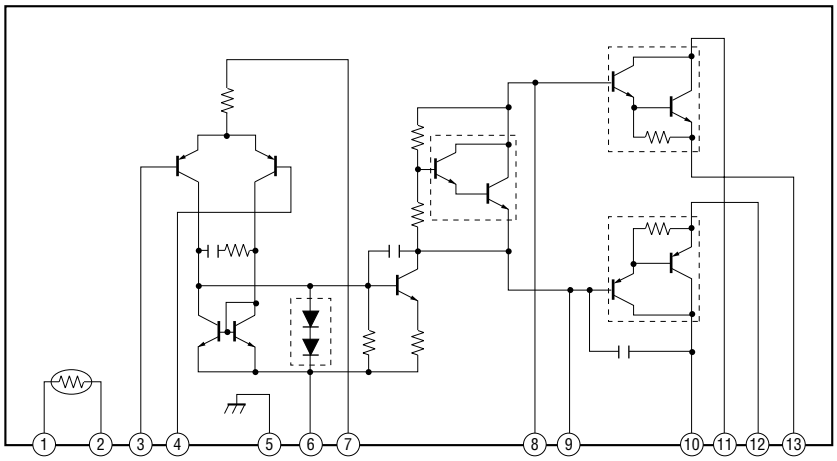
- o——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▬▬ : Pattern from the side which enables seeing.

1-2. CIRCUIT BOARDS LOCATION

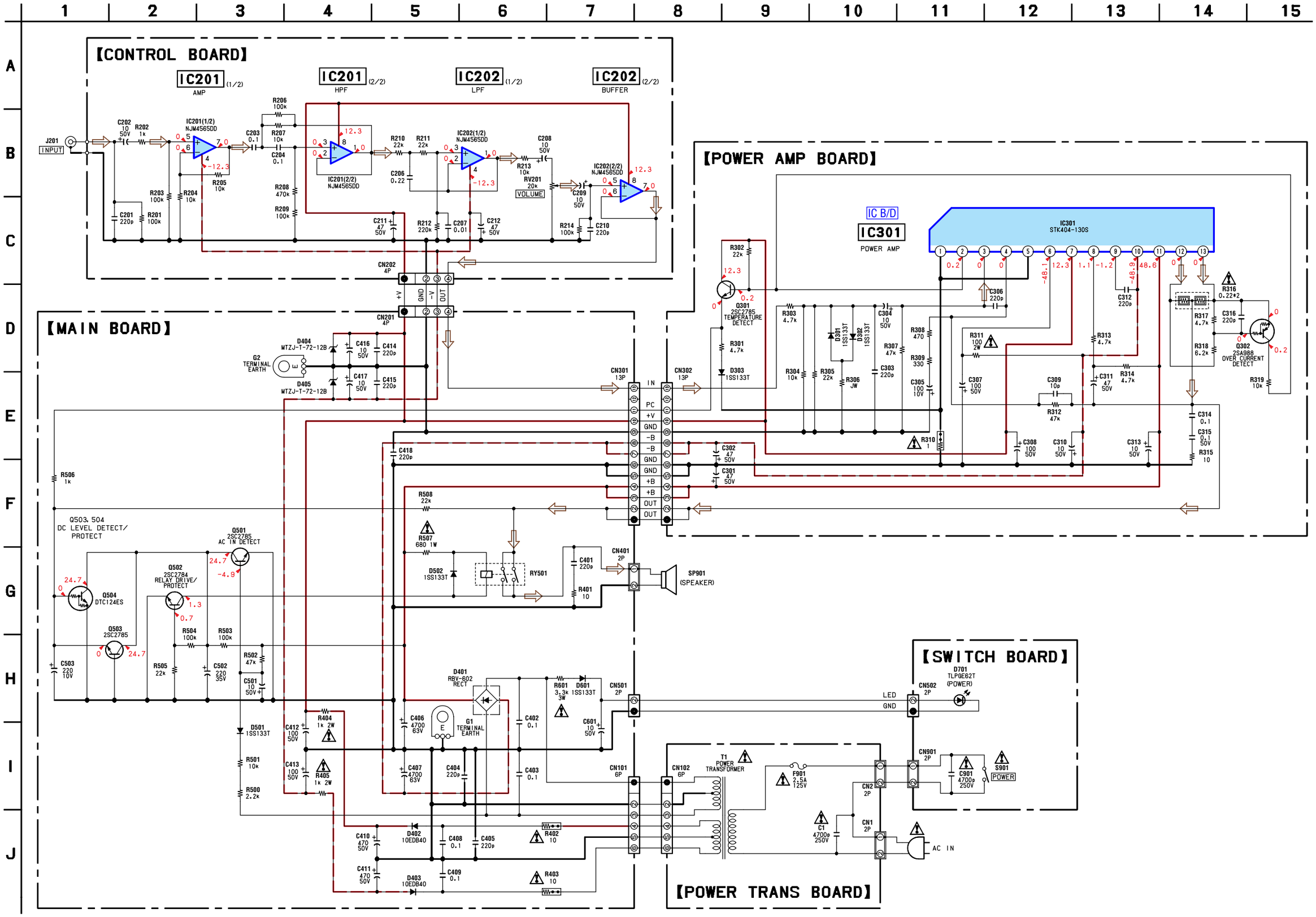


• IC BLOCK DIAGRAM

IC301 STK404-130S (POWER AMP Board)



1-3. SCHEMATIC DIAGRAM — MAIN SECTION — • Refer to page 4 for IC Block Diagram.



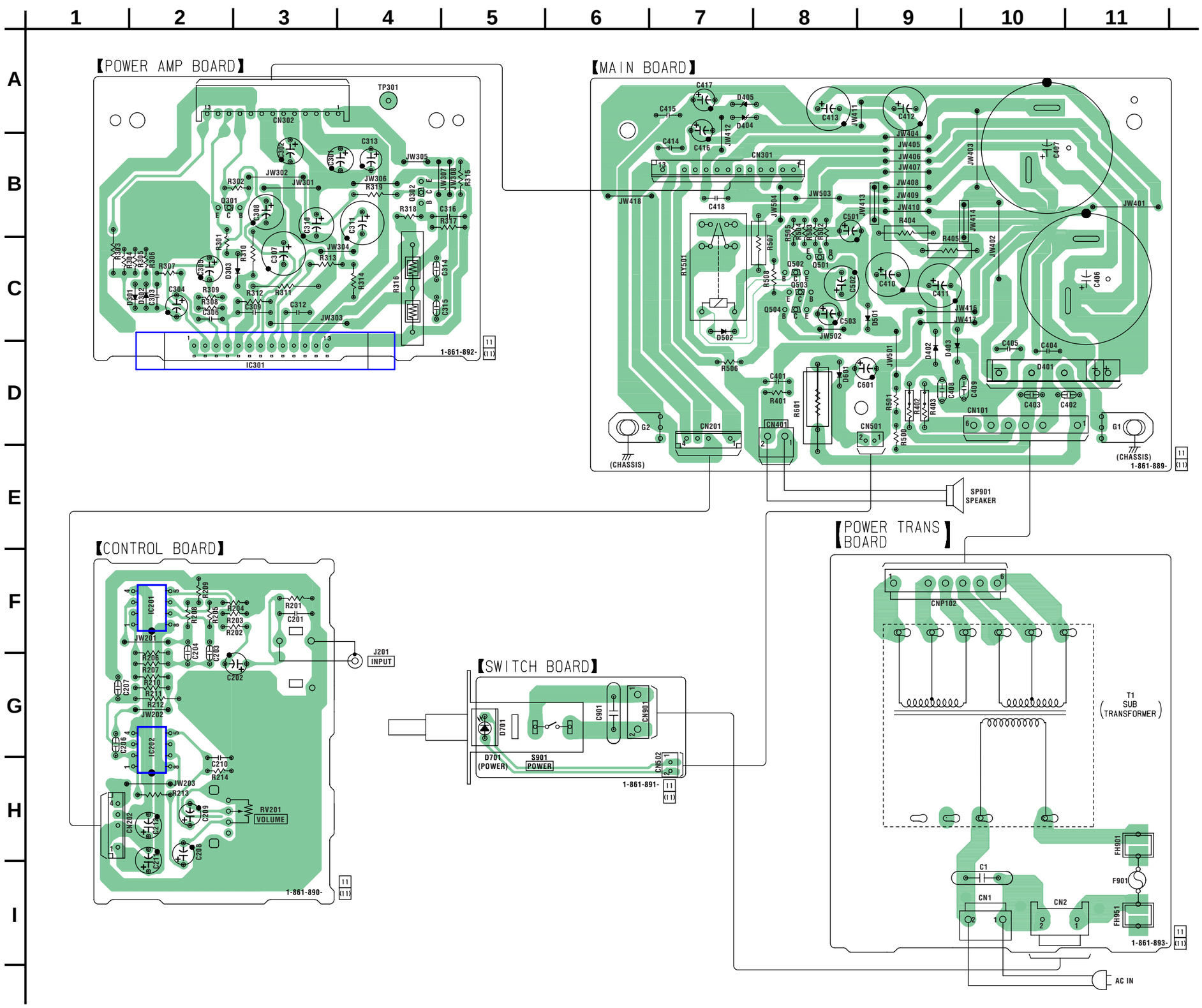
1-4. PRINTED WIRING BOARDS — MAIN SECTION —

• Refer to page 3 for Circuit Boards Location.

: Uses unleaded solder.

• **Semiconductor Location**

Ref. No.	Location
D301	C-2
D302	C-2
D303	C-3
D401	D-10
D402	D-9
D403	D-9
D404	A-7
D405	A-7
D501	C-9
D502	C-7
D601	D-8
D701	G-5
IC201	F-2
IC202	G-2
IC301	D-3
Q301	B-2
Q302	B-4
Q501	C-8
Q502	C-8
Q503	C-8
Q504	C-8

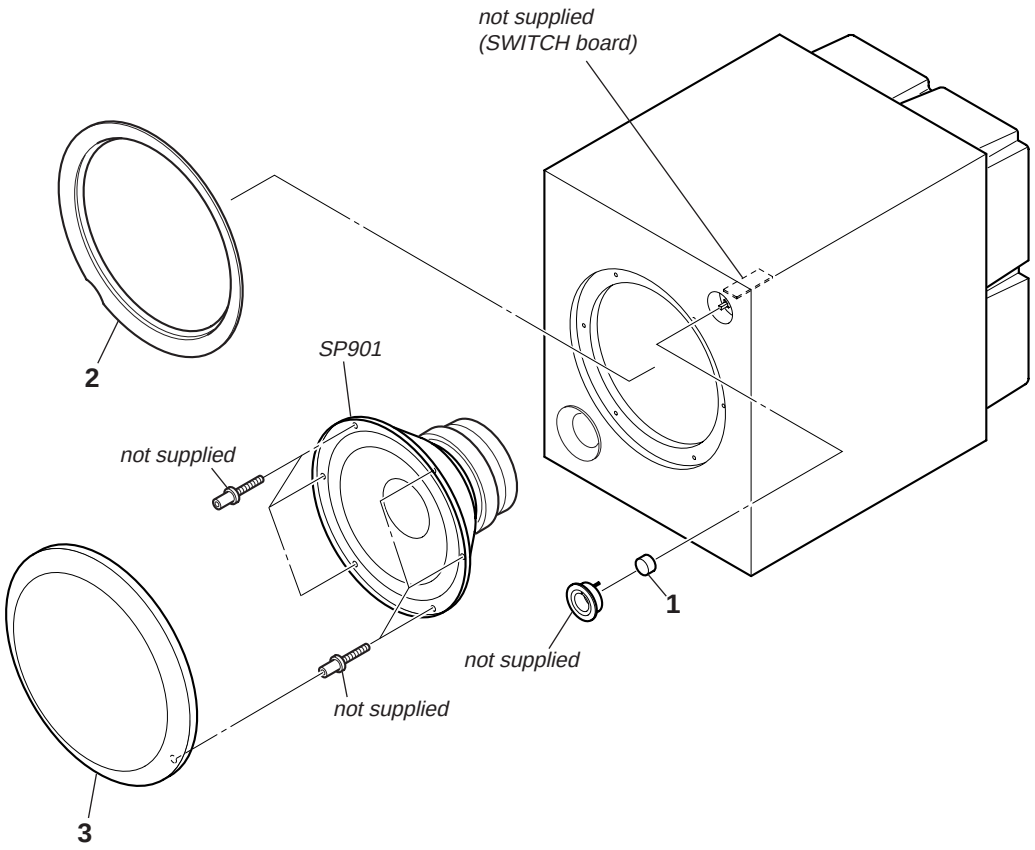


SECTION 2
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Accessories are given in the last of this parts list.

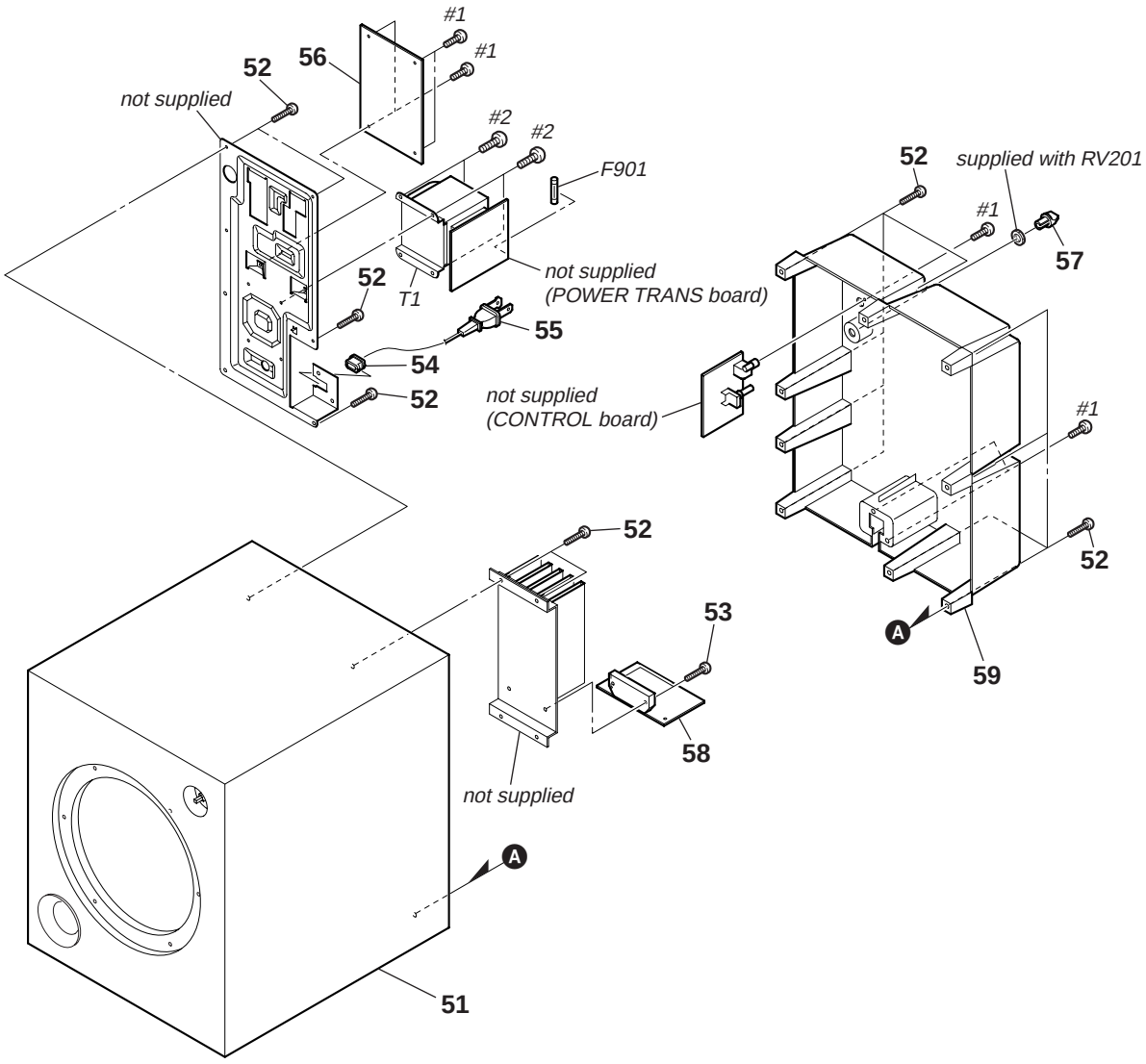
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

2-1. FRONT SECTION



Ref. No.	Part No.	Description	Remark
1	4-253-282-01	KNOB, PUSH	
2	4-253-279-01	WOOFER (RING)	
3	4-253-280-01	GRILLE (FRAME)	
SP901	1-825-768-11	SPEAKER (25cm) (WOOFER)	

2-2. REAR SECTION



The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	A-4713-864-A	CABINET ASSY, SPEAKER	
52	4-235-677-01	SCREW (4X20) (TYPE1), +BVTP	
53	3-905-609-31	SCREW (TRANSISTOR)	
* 54	3-703-244-00	BUSHING (2104), CORD	
⚠55	1-783-820-11	CORD, POWER	
56	A-4751-955-A	MAIN BOARD, COMPLETE	
57	4-999-482-81	KNOB (VOL)	
58	A-4751-957-A	POWER AMP BOARD, COMPLETE	
59	4-253-276-01	REAR (COVER)	
⚠F901	1-533-450-12	FUSE, GLASS TUBE (DIA.5) (2.5A/125V)	
⚠T1	1-439-625-12	TRANSFORMER, POWER	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-881-09	SCREW +BVTT 4X8 (S)	

SECTION 3
ELECTRICAL PARTS LIST

CONTROL | MAIN

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example:
  uA.. : μA.. uPA.. : μPA..
  uPB.. : μPB.. uPC.. : μPC.. uPD.. : μPD..
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		CONTROL BOARD			
		**********			
		< CAPACITOR >			
C201	1-128-813-11	CERAMIC	220PF	5%	50V
C202	1-126-964-11	ELECT	10uF	20%	50V
C203	1-136-165-00	FILM	0.1uF	5%	50V
C204	1-136-165-00	FILM	0.1uF	5%	50V
C206	1-131-696-11	FILM	0.22uF	5%	50V
C207	1-131-679-31	FILM	0.01uF	5%	50V
C208	1-126-964-11	ELECT	10uF	20%	50V
C209	1-126-964-11	ELECT	10uF	20%	50V
C210	1-128-813-11	CERAMIC	220PF	5%	50V
C211	1-126-967-11	ELECT	47uF	20%	50V
C212	1-126-967-11	ELECT	47uF	20%	50V
		< CONNECTOR >			
CN202	1-818-594-11	PIN, CONNECTOR 4P			
		< IC >			
IC201	8-759-636-74	IC M5218AP-22			
IC202	8-759-636-74	IC M5218AP-22			
		< JACK >			
J201	1-815-025-11	JACK, PIN 1P (INPUT)			
		< RESISTOR >			
R201	1-247-879-11	CARBON	100K	5%	1/4W
R202	1-247-831-11	CARBON	1K	5%	1/4W
R203	1-247-879-11	CARBON	100K	5%	1/4W
R204	1-249-429-11	CARBON	10K	5%	1/4W
R205	1-249-429-11	CARBON	10K	5%	1/4W
R206	1-247-879-11	CARBON	100K	5%	1/4W
R207	1-249-429-11	CARBON	10K	5%	1/4W
R208	1-247-895-00	CARBON	470K	5%	1/4W
R209	1-247-879-11	CARBON	100K	5%	1/4W
R210	1-247-863-11	CARBON	22K	5%	1/4W
R211	1-247-863-11	CARBON	22K	5%	1/4W
R212	1-247-887-00	CARBON	220K	5%	1/4W
R213	1-249-429-11	CARBON	10K	5%	1/4W
R214	1-247-879-11	CARBON	100K	5%	1/4W

Ref. No.	Part No.	Description			Remark
		< VARIABLE RESISTOR >			
RV201	1-227-511-11	RES, VAR, CARBON 20K (VOLUME)			
**********					
	A-4751-955-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C401	1-128-813-11	CERAMIC	220PF	5%	50V
C402	1-136-165-00	FILM	0.1uF	5%	50V
C403	1-136-165-00	FILM	0.1uF	5%	50V
C404	1-128-813-11	CERAMIC	220PF	5%	50V
C405	1-128-813-11	CERAMIC	220PF	5%	50V
C406	1-100-935-11	ELECT	4700uF		63V
C407	1-100-935-11	ELECT	4700uF		63V
C408	1-136-165-00	FILM	0.1uF	5%	50V
C409	1-136-165-00	FILM	0.1uF	5%	50V
C410	1-126-971-11	ELECT	470uF	20%	50V
C411	1-126-971-11	ELECT	470uF	20%	50V
C412	1-126-968-11	ELECT	100uF	20%	50V
C413	1-126-968-11	ELECT	100uF	20%	50V
C414	1-128-813-11	CERAMIC	220PF	5%	50V
C415	1-128-813-11	CERAMIC	220PF	5%	50V
C416	1-126-964-11	ELECT	10uF	20%	50V
C417	1-126-964-11	ELECT	10uF	20%	50V
C418	1-128-813-11	CERAMIC	220PF	5%	50V
C501	1-126-964-11	ELECT	10uF	20%	50V
C502	1-126-949-11	ELECT	220uF	20%	35V
C503	1-126-923-11	ELECT	220uF	20%	10V
C601	1-126-964-11	ELECT	10uF	20%	50V
		< CONNECTOR >			
CN101	1-785-104-11	PIN, CONNECTOR (3.96mm PITCH) 6P			
CN201	1-818-594-11	PIN, CONNECTOR 4P			
CN401	1-564-320-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
CN501	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
		< DIODE >			
D401	8-719-302-38	DIODE RBV-602-01			
D402	6-500-522-11	DIODE 10EDB40-TA2B5			
D403	6-500-522-11	DIODE 10EDB40-TA2B5			
D404	8-719-110-31	DIODE RD12ESB2			
D405	8-719-110-31	DIODE RD12ESB2			
D501	8-719-991-33	DIODE 1SS133T-77			

MAIN | POWER AMP | POWER TRANS | SWITCH

Ref. No.	Part No.	Description				Remark
D502	8-719-991-33	DIODE 1SS133T-77				
D601	8-719-991-33	DIODE 1SS133T-77				
		< GROUND TERMINAL >				
G1	1-537-738-21	TERMINAL, GROUND				
G2	1-537-738-21	TERMINAL, GROUND				
		< TRANSISTOR >				
Q501	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q502	8-729-178-42	TRANSISTOR 2SC2784-F				
Q503	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q504	8-729-029-86	TRANSISTOR DTC124ESA				
		< RESISTOR >				
R401	1-249-393-11	CARBON	10	5%	1/4W	
⚠R402	1-219-153-11	FUSIBLE	10	5%	1/4W	F
⚠R403	1-219-153-11	FUSIBLE	10	5%	1/4W	F
⚠R404	1-215-892-11	METAL OXIDE	1K	5%	2W	F
⚠R405	1-215-892-11	METAL OXIDE	1K	5%	2W	F
R500	1-249-421-11	CARBON	2.2K	5%	1/4W	
R501	1-249-429-11	CARBON	10K	5%	1/4W	
R502	1-247-871-11	CARBON	47K	5%	1/4W	
R503	1-247-879-11	CARBON	100K	5%	1/4W	
R504	1-247-879-11	CARBON	100K	5%	1/4W	
R505	1-247-863-11	CARBON	22K	5%	1/4W	
R506	1-247-831-11	CARBON	1K	5%	1/4W	
⚠R507	1-215-868-00	METAL OXIDE	680	5%	1W	F
R508	1-247-863-11	CARBON	22K	5%	1/4W	
⚠R601	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
		< RELAY >				
RY501	1-515-920-11	RELAY (24V)				
**********						
	A-4751-957-A	POWER AMP BOARD, COMPLETE				
		**********				
		< CAPACITOR >				
C301	1-126-967-11	ELECT	47uF	20%	50V	
C302	1-126-967-11	ELECT	47uF	20%	50V	
C303	1-128-813-11	CERAMIC	220PF	5%	50V	
C304	1-126-964-11	ELECT	10uF	20%	50V	
C305	1-104-658-11	ELECT	100uF	20%	10V	
C306	1-128-813-11	CERAMIC	220PF	5%	50V	
C307	1-126-968-11	ELECT	100uF	20%	50V	
C308	1-126-968-11	ELECT	100uF	20%	50V	
C309	1-162-199-31	CERAMIC	10PF	5%	50V	
C310	1-126-964-11	ELECT	10uF	20%	50V	
C311	1-126-967-11	ELECT	47uF	20%	50V	
C312	1-128-813-11	CERAMIC	220PF	5%	50V	
C313	1-126-964-11	ELECT	10uF	20%	50V	
C314	1-136-165-00	FILM	0.1uF	5%	50V	
C315	1-136-165-00	FILM	0.1uF	5%	50V	
C316	1-128-813-11	CERAMIC	220PF	5%	50V	
		< CONNECTOR >				
CN302	1-818-593-11	PLUG, CONNECTOR 13P				

Ref. No.	Part No.	Description				Remark
		< DIODE >				
D301	8-719-991-33	DIODE 1SS133T-77				
D302	8-719-991-33	DIODE 1SS133T-77				
D303	8-719-991-33	DIODE 1SS133T-77				
		< IC >				
IC301	6-600-091-01	IC STK404-130S				
		< TRANSISTOR >				
Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q302	8-729-140-82	TRANSISTOR 2SA988-PAFAEA				
		< RESISTOR >				
R301	1-247-847-11	CARBON	4.7K	5%	1/4W	
R302	1-247-863-11	CARBON	22K	5%	1/4W	
R303	1-247-847-11	CARBON	4.7K	5%	1/4W	
R304	1-249-429-11	CARBON	10K	5%	1/4W	
R305	1-247-863-11	CARBON	22K	5%	1/4W	
R307	1-247-871-11	CARBON	47K	5%	1/4W	
R308	1-249-413-11	CARBON	470	5%	1/4W	
R309	1-249-411-11	CARBON	330	5%	1/4W	
⚠R310	1-217-637-00	FUSIBLE	1	5%	1/4W	F
⚠R311	1-215-886-11	METAL OXIDE	100	5%	2W	F
R312	1-247-871-11	CARBON	47K	5%	1/4W	
R313	1-247-847-11	CARBON	4.7K	5%	1/4W	
R314	1-247-847-11	CARBON	4.7K	5%	1/4W	
R315	1-249-393-11	CARBON	10	5%	1/4W	
⚠R316	1-234-182-11	ENCAPSULATED COMPONENT 0.22X2 5W				
R317	1-247-847-11	CARBON	4.7K	5%	1/4W	
R318	1-247-850-11	CARBON	6.2K	5%	1/4W	
R319	1-249-429-11	CARBON	10K	5%	1/4W	
**********						
		POWER TRANS BOARD				
		**********				
	1-533-217-41	HOLDER, FUSE				
		< CAPACITOR >				
⚠C1	1-113-924-11	CERAMIC	0.0047uF	20%	250V	
		< CONNECTOR >				
CN1	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH) 2P				
* CN2	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P				
**********						
		SWITCH BOARD				
		**********				
		< CAPACITOR >				
⚠C901	1-113-924-11	CERAMIC	0.0047uF	20%	250V	
		< CONNECTOR >				
CN502	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P				
* CN901	1-695-044-11	PIN, CONNECTOR (3.96mm PITCH) 2P				

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D701	6-500-991-01	LED TLPGE62T(SONY-M.F) (POWER)	
		< SWITCH >	
⚠S901	1-554-920-11	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)	
**********			
		MISCELLANEOUS	
		**********	
⚠55	1-783-820-11	CORD, POWER	
⚠F901	1-533-450-12	FUSE, GLASS TUBE (DIA.5) (2.5A/125V)	
SP901	1-825-768-11	SPEAKER (25cm) (WOOFER)	
⚠T1	1-439-625-12	TRANSFORMER, POWER	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2004.07	New